CLAIMS

1. A brake system for electrically operating a brake, the brake system comprising:

a stepping force sensor;

a brake arm; and

a feeling-of-stepping-force generation mechanism which is disposed between the stepping force sensor and the bake arm, and which is rotatably connected with each of the stepping force sensor and the brake arm so as to generate a stepping force that changes nonlinearly with respect to a travel stroke of the brake arm, wherein

in response to a tension which is applied via the feeling-of-stepping-force generation mechanism by a travel of brake arm, the stepping force sensor detects a stepping force, thereby generating output to control the brake electrically operated.

2. The brake system according to claim 1, wherein

the feeling-of-stepping-force generation mechanism comprises:

a housing;

a spring disposed in the housing;

a travel mechanism which is disposed in the housing and which expands and contracts the spring disposed in the housing in accordance with the travel of the brake arm, and

the travel mechanism and the brake arm are rotatably connected to each other, and the spring generates a stepping force

that changes nonlinearly with respect to the travel stroke of the brake arm.

3. The brake system according to claim 1, wherein

the stepping force sensor includes a first hooking part connected to the stepping force sensor;

the feeling-of-stepping-force generation mechanism contains a first hook and a second hook;

the brake arm includes a second hooking part;

the first hook is hooked on the first hooking part;

the second hook is hooked on the second hooking part; and

each of the stepping force sensor and the brake arm is rotatably connected with the feeling-of-stepping-force generation mechanism.

4. The brake system according to claim 2, wherein

the stepping force sensor includes a first hooking part connected to the stepping force sensor;

the feeling-of-stepping-force generation mechanism contains a first hook and a second hook;

the brake arm includes a second hooking part;

the first hook is hooked on the first hooking part;

the second hook is hooked on the second hooking part; and

each of the stepping force sensor and the brake arm is rotatably connected with the feeling-of-stepping-force generation mechanism.

5. The brake system according to claim 2 or 4, wherein

the spring includes a first coil spring and a second coil spring shorter in length than the first coil spring;

the travel mechanism is composed of a piston coupled to the brake arm; and

the piston travels in accordance with the travel of the brake arm so as to expand and contract the first spring and the second spring.

6. The brake system according to claim 2 or 4, wherein

the spring is formed of a hourglass-shaped coil spring;

the travel mechanism is composed of a piston coupled to the brake arm; and

the piston travels in accordance with the travel of the brake arm so as to expand and contract the hourglass-shaped coil spring.

7. The brake system according to claim 2 or 4, wherein

the spring is formed of a volute spring;

the travel mechanism is composed of a piston coupled to the brake arm; and

the piston travels in accordance with the travel of the brake arm so as to expand and contract the volute spring.